

**What is claimed is:**

1. A static random access memory cell, comprising:

a first and second passgate transistor;

5 a first and second storage node, wherein the first passgate transistor is connected between a first bit line and a first storage node, wherein a gate terminal of the first passgate transistor connects to a word line, and the second passgate transistor is connected between a second bit line and the second storage node, wherein a gate terminal of the second passgate transistor connects to the word line;

10 a first pull-up device, connected between a source voltage and the first storage node;

a second pull-up device, connected between the source voltage and the second storage node;

15 a first pull-down transistor, connected between the first storage node and a ground, wherein a gate terminal of the first pull-down transistor is connected to the second storage node; and

a second pull-down transistor, connected between the second storage node and the ground, wherein a gate terminal of the second pull-down transistor is connected to the first storage node;

20 wherein the first and second passgate transistors have first threshold voltages that are substantially the same, and wherein the first and second pull-down transistors have second threshold voltages that are

substantially the same, and wherein the first threshold voltages are greater than the second threshold voltages.

5        2. The memory cell of claim 1, wherein the first threshold voltages are about 0.7 V and the second threshold voltages are about 0.3 V.

10       3. The memory cell of claim 1, wherein the first and second passgate transistor have first channel widths that are substantially the same, and wherein the first and second pull-down transistor have second channel widths that are substantially the same, wherein the second channel widths are greater than the first channel widths.

15       4. The memory cell of claim 3, wherein the memory cell has a cell beta ratio of about 3.0.

20       5. The memory cell of claim 1, wherein the first and second passgate transistor have first channel widths that are substantially the same, and wherein the first and second pull-down transistor have second channel widths that are substantially the same, wherein the second channel widths and the first channel widths are substantially the same and a cell beta ration is about 1.

6. The memory cell of claim 5, wherein the first threshold voltage is 0.7 V and the second threshold voltage is about 0.3 V.

7. The memory cell of claim 6, wherein the memory cell size is about 2.40  $\mu\text{m}^2$ .

8. The memory cell of claim 1, wherein the first pull-up device is a first pull-up transistor and second pull-up device is a second pull-up transistor, and wherein a gate terminal of the first pull-up transistor connects to the second storage node and a gate terminal of the second pull-up transistor connects to the first storage node.

9. A 6-transistor static random access memory cell comprising:  
a first and second bit line terminal;  
a first and second storage node;  
a wordline;  
a first NFET access transistor connected between the first bit line terminal and the first storage node, wherein a gate terminal of the first access transistor is connected to a wordline;  
a second NFET access transistor connected between the second bit line terminal and the second storage node, wherein a gate terminal of the second access transistor is connected to a wordline;  
a first PFET pull-up transistor connected between a voltage source and the first storage node, wherein a gate terminal of the first pull-up transistor is connected to the second storage node;

a second PFET pull-up transistor connected between a voltage source and the second storage node, wherein a gate terminal of the second pull-up transistor is connected to the first storage node;

5 a first NFET pull-down transistor connected between the first storage node and a ground, wherein a gate terminal of the first pull-down transistor is connected to the second storage node; and

a second NFET pull-down transistor connected between the second storage node and a ground, wherein a gate terminal of the second pull-down transistor is connected to the first storage node,

10 wherein the first and second access transistor have first threshold voltages that are substantially the same, and wherein the first and second NFET pull-down transistors have second threshold voltages that are substantially the same, wherein the second threshold voltages are greater than the first threshold voltages.

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10. The memory cell of claim 9, wherein the first threshold voltages are about 0.7 V and the second threshold voltages are about 0.3 V.

11. The memory cell of claim 9, wherein the first and second access transistor have first channel widths that are substantially the same, and wherein the first and second pull-down transistor have second channel widths that are substantially the same, wherein the second channel widths are greater than the first channel widths.

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12. The memory cell of claim 11, wherein the memory cell has a cell beta ratio of about 3.0.

13. The memory cell of claim 9, wherein the first and second access  
5 transistor have first channel widths that are substantially the same, and wherein the first and second pull-down transistor have second channel widths that are substantially the same, wherein the second channel widths and the first channel widths are substantially the same and a cell beta ratio is about 1.

10 14. The memory cell of claim 13, wherein the first threshold voltage is 0.7 v and the second threshold voltage is about 0.3 v.

15 15. The memory cell of claim 14, wherein the memory cell size is about 2.40  $\mu\text{m}^2$ .

16. A memory system, comprising:  
a memory array comprising an array of memory cells formed on a semiconductor substrate arranged in rows and columns, wherein a row of memory cells is commonly connected to a wordline and wherein a column of  
20 memory cells is commonly connected to a bit line pair;  
a controller for generating address and command signals; and  
decoding circuitry for decoding the address and command signals to access memory cells in the memory array, wherein each memory cell in the

memory array comprises a 6-transistor static random access memory (SRAM)  
cell comprising:

a first and second bit line terminal;

a first and second storage node;

5 a wordline;

a first NFET access transistor connected between the first bit line terminal  
and the first storage node, wherein a gate terminal of the first access transistor is  
connected to a wordline;

10 a second NFET access transistor connected between the second bit line  
terminal and the second storage node, wherein a gate terminal of the second  
access transistor is connected to a wordline;

a first PFET pull-up transistor connected between a voltage source and  
the first storage node, wherein a gate terminal of the first pull-up transistor is  
connected to the second storage node;

15 a second PFET pull-up transistor connected between a voltage source  
and the second storage node, wherein a gate terminal of the second pull-up  
transistor is connected to the first storage node;

a first NFET pull-down transistor connected between the first storage  
node and a ground, wherein a gate terminal of the first pull-down transistor is  
20 connected to the second storage node; and

a second NFET pull-down transistor connected between the second  
storage node and a ground, wherein a gate terminal of the second pull-down  
transistor is connected to the first storage node,

wherein the first and second access transistor have first threshold voltages that are substantially the same, and wherein the first and second NFET pull-down transistors have second threshold voltages that are substantially the same, wherein the second threshold voltages are greater than the first threshold voltages.

17. The memory system of claim 16, wherein first threshold voltages are about 0.7 V and the second threshold voltages are about 0.3 V.

18. The memory system of claim 16, wherein the first and second access transistor have first channel widths that are substantially the same, and wherein the first and second pull-down transistor have second channel widths that are substantially the same, wherein the second channel widths are greater than the first channel widths.

19. The memory system of claim 18, wherein the memory cell has a cell beta ratio of about 3.0.

20. The memory system of claim 16, wherein the first and second access transistor have first channel widths that are substantially the same, and wherein the first and second pull-down transistor have second channel widths that are substantially the same, wherein the second channel widths and the first channel widths are substantially the same and a cell beta ratio is about 1.

21. The memory system of claim 20, wherein the first threshold voltage is 0.7 V and the second threshold voltage is about 0.3 V.

22. The memory system of claim 21, wherein the memory cell size is  
5 about 2.40  $\mu\text{m}^2$ .